

In the Claims

1. (Currently amended) A composition for emulsifying free hydrocarbons in drill cuttings comprising:

a combination of non-ionic emulsifiers with anionic emulsifiers having an HLB effective to ~~emulsify said free hydrocarbons and produce an emulsion comprising free hydrocarbon droplets,~~ said combination further comprising a media adapted to initiate acid reactive polymerization of a polymerizable silicate solution thereby encapsulating said droplets ~~encapsulating material;~~

wherein said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols.

2. (Currently amended) The composition of claim 1 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon chain having from about 8 to about 18 carbon atoms; and

said polyoxyethylene alcohols ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols having a carbon chain of about 8 to about 30 carbon atoms and having from about 3 to about 50 moles ethylene oxide.

3. (Previously presented) The composition of claim 1 wherein said polyoxyethylene alcohols comprise from about 13 to about 15 carbon atoms.

4. (Previously presented) The composition of claim 1 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

5. (Previously presented) The composition of claim 2 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

6. (Previously presented) The composition of claim 3 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

7. (Previously presented) The composition of claim 1 wherein said polyoxyethylene alcohols are selected from the group consisting of linear polyoxyethylene alcohols, polyoxyethylene alcohols having about 10 moles ethylene oxide, and a combination thereof.

8. (Previously presented) The composition of claim 2 wherein said polyoxyethylene alcohols are selected from the group consisting of linear polyoxyethylene alcohols, polyoxyethylene alcohols having about 10 moles ethylene oxide, and a combination thereof.

9. (Previously presented) The composition of claim 3 wherein said polyoxyethylene alcohols are selected from the group consisting of linear polyoxyethylene alcohols, polyoxyethylene alcohols having about 10 moles ethylene oxide, and a combination thereof.

10. (Previously presented) The composition of claim 1 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%.

11. (Previously presented) The composition of claim 2 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%.

12. (Previously presented) The composition of claim 4 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%.

13. (Previously presented) The composition of claim 5 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%.

14. (Previously presented) The composition of claim 6 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%.

15. (Currently amended) ~~The composition of claim 9 wherein said combination comprises~~ A composition for emulsifying free hydrocarbons in drill cuttings comprising:

a combination comprising a blend of non-ionic emulsifier and anionic emulsifier at a ratio of about 50/50 wt% to about 85/15 wt%, said blend having an HLB effective to emulsify said free hydrocarbons and comprising a media adapted to initiate acid reactive polymerization of a polymerizable silicate solution;

wherein said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers are selected from the group consisting of linear polyoxyethylene alcohols having from about 13 to about 15 carbon atoms and having about 10 moles ethylene oxide, and a combination thereof.

16-24. (Canceled)

25. (Previously presented) The composition of claim 1 wherein said alkane sulfates, alkane sulfonates, and phosphate esters have from about 8 to about 12 carbon atoms.

26-28. (Canceled)

29. (Original) The composition of claim 10 comprising about 10 wt.% or less of said combination of non-ionic emulsifiers with anionic emulsifiers.

30. (Currently amended) A composition for emulsifying free hydrocarbons in drill cuttings to encapsulate free hydrocarbons comprising:

an emulsion comprising droplets comprising free hydrocarbons emulsified by a combination of non-ionic emulsifiers with anionic emulsifiers comprising a media adapted to initiate acid reactive polymerization of a polymerizable silicate solution thereby encapsulating said free hydrocarbons encapsulating material,

wherein said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers comprise are selected from the group consisting of polyoxyethylene alcohols.

31. (Currently amended) The composition of claim 30 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon chain having from about 8 to about 18 carbon atoms; and, said polyoxyethylene alcohols ~~comprise an alcohol~~ are selected from the group consisting of polyoxyethylene alcohols having a carbon chain of about 8 to about 30 carbon atoms and having from about 3 to about 50 moles ethylene oxide.

32. (Previously presented) The composition of claim 30 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon chain having from about 13 to about 15 carbon atoms.

33. (Original) The composition of claim 32 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

34. (Currently amended) The composition of claim 32 wherein said ~~anionic emulsifiers~~ polyoxyethylene alcohols are selected from the group consisting essentially of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

35-36. (Canceled)

37-42. (Withdrawn)

43. (Currently amended) A composition comprising:

drill cuttings; and,

an emulsion comprising droplets comprising free hydrocarbons emulsified by a combination of non-ionic emulsifiers with anionic emulsifiers having an HLB effective to emulsify said free hydrocarbons in a media adapted to initiate acid reactive polymerization of a polymerizable ~~encapsulating material~~ silicate solution,

wherein said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols.

44. (Currently amended) The composition of claim 43 wherein said anionic emulsifiers comprise from about 8 to about 18 carbon atoms; and said polyoxyethylene alcohols ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols having from about 8 to about 30 carbon atoms and having from about 3 to about 50 moles ethylene oxide.

45. (Previously presented) The composition of claim 44 wherein said anionic emulsifiers comprise from about 13 to about 15 carbon atoms.

46. (Previously presented) The composition of claim 45 wherein said anionic emulsifiers are selected from the group consisting essentially of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

47-48. (Canceled).

49. (Previously presented) The composition of claim 43 wherein said droplets have a diameter of from about 3 microns to about 20 microns.

50. (Previously presented) The composition of claim 49 wherein said droplets have a diameter of from about 3 to about 10 microns.

51-52. (Canceled).

53-79. (Withdrawn).

80. (Currently amended) A composition consisting essentially of:

a combination of non-ionic emulsifiers with anionic emulsifiers having an HLB

~~effective to emulsify free hydrocarbons and produce an emulsion~~

comprising free hydrocarbon droplets, said combination further

comprising a media adapted to initiate acid reactive polymerization of a

~~polymerizable—encapsulating—material~~ silicate solution thereby

encapsulating said free hydrocarbon droplets; wherein

said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols.

81. (Currently amended) The composition of claim 80 wherein

said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon chain having from about 8 to about 18 carbon atoms; and

said polyoxyethylene alcohols are selected from the group consisting of

polyoxyethylene alcohols ~~comprise an alcohol~~ having a carbon chain of

about 8 to about 30 carbon atoms and having from about 3 to about 50

moles ethylene oxide.

82. (Currently amended) The composition of claim 80 wherein said polyoxyethylene alcohols ~~comprise an alcohol~~ are selected from the group consisting of polyoxyethylene alcohols having from about 13 to about 15 carbon atoms.

83. (Currently amended) The composition of claim 80 wherein said polyoxyethylene alcohols ~~comprise an alcohol~~ are selected from the group consisting of polyoxyethylene alcohols having from about 3 to about 20 moles ethylene oxide.

84. (Currently amended) The composition of claim 81 wherein said polyoxyethylene alcohols ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols having from about 3 to about 20 moles ethylene oxide.

85. (Currently amended) The composition of claim 82 wherein said polyoxyethylene alcohols ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols having from about 3 to about 20 moles ethylene oxide.

86. (Currently amended) The composition of claim 80 wherein said polyoxyethylene alcohols are selected from the group consisting ~~essentially~~ of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

87. (Currently amended) The composition of claim 81 wherein said polyoxyethylene alcohols are selected from the group consisting ~~essentially~~ of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

88. (Currently amended) The composition of claim 82 wherein said polyoxyethylene alcohols are selected from the group consisting ~~essentially~~ of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

89. (Currently amended) The composition of claim 80 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

90. (Currently amended) The composition of claim 81 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

91. (Currently amended) The composition of claim 83 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

92. (Currently amended) The composition of claim 84 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

93. (Currently amended) The composition of claim 85 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

94. (Currently amended) The composition of claim 88 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

95. (Previously presented) The composition of claim 80 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

96. (Previously presented) The composition of claim 82 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

97. (Previously presented) The composition of claim 83 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

98. (Previously presented) The composition of claim 85 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

99. (Previously presented) The composition of claim 89 comprising about 10 wt.% or less of said combination of non-ionic emulsifiers with anionic emulsifiers.

100. (Currently amended) A composition consisting essentially of:

an emulsion comprising droplets comprising free hydrocarbons emulsified by a combination of non-ionic emulsifiers with anionic emulsifiers having an HLB effective to emulsify said free hydrocarbons and comprising a media adapted to initiate acid reactive polymerization of a polymerizable silicate solution,

wherein said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers ~~comprise~~ are selected from the group consisting of polyoxyethylene alcohols.

101. (Currently amended) The composition of claim 100 wherein:

said polyoxyethylene alcohols comprise from about 8 to about 18 carbon atoms;
and,

said polyoxyethylene alcohols are selected from the group consisting of
polyoxyethylene alcohols having ~~comprise~~ from about 8 to about 30
carbon atoms and from about 3 to about 50 moles ethylene oxide.

102. (Previously presented) The composition of claim 100 wherein said
polyoxyethylene alcohols comprise from about 13 to about 15 carbon atoms.

103. (Previously presented) The composition of claim 102 wherein said
polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

104. (Currently amended) The composition of claim 102 wherein said
polyoxyethylene alcohols are selected from the group consisting essentially of linear
polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene
oxide, and a combination thereof.

105. (Currently amended) A composition consisting essentially of:
drill cuttings; and,

an emulsion comprising droplets comprising free hydrocarbons emulsified by a
combination of non-ionic emulsifiers with anionic emulsifiers having an
HLB effective to emulsify said free hydrocarbons, said emulsion
comprising a media adapted to initiate acid reactive polymerization of a
polymerizable silicate solution ~~encapsulating material~~,

wherein

said anionic emulsifiers are selected from the group consisting of alkane sulfates,
alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers ~~comprise~~ are selected from the group consisting of
polyoxyethylene alcohols.

106. (Currently amended) The composition of claim 105 wherein
said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon
chain having from about 8 to about 18 carbon atoms; and
said polyoxyethylene alcohols ~~comprise an alcohol~~ are selected from the group
consisting of polyoxyethylene alcohols having a carbon chain of about 8

to about 30 carbon atoms and having from about 3 to about 50 moles ethylene oxide.

107. (Currently amended) The composition of claim 106 wherein said polyoxyethylene alcohols ~~comprise an alcohol~~ are selected from the group consisting of polyoxyethylene alcohols having from about 13 to about 15 carbon atoms.

108. (Currently amended) The composition of claim 107 wherein said polyoxyethylene alcohols are selected from the group consisting ~~essentially of linear~~ polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

109. (Previously presented) The composition of claim 105 wherein said droplets have a diameter of from about 3 microns to about 20 microns.

110. (Currently amended) The composition of claim 109 wherein said droplets have a diameter of from about 3 microns to about 10 microns ~~or less~~.

111. (Previously presented) The composition of claim 108 wherein said droplets have a diameter of from about 3 microns to about 20 microns.

112. (Currently amended) The composition of claim 111 wherein said droplets have a diameter of from about 3 microns to about 10 microns ~~or less~~.

113. (Currently amended) A composition for emulsifying free hydrocarbons in drill cuttings obtained using a drilling fluid comprising isomerized olefins, said composition consisting essentially of:

a combination of non-ionic emulsifiers and anionic emulsifiers, said combination having an HLB of about 12.5, said anionic emulsifiers being selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters and said non-ionic emulsifiers comprise polyoxyethylene alcohols; and,

a media adapted to initiate polymerization of a polymerizable silicate solution ~~polymerizable encapsulating material~~.

114. (Previously presented) The composition of claim 113 wherein said media comprises an aqueous solution of phosphoric acid.

115. (Previously presented) The composition of claim 114 wherein said aqueous solution of phosphoric acid comprises about 75 wt% phosphoric acid.

116. (Currently amended) The composition of claim 114 wherein said combination of non-ionic emulsifiers and anionic emulsifiers is at a weight ratio to said aqueous solution of phosphoric acid of about of 3:23.

117. (Currently amended) The composition of claim 115 wherein said combination of non-ionic emulsifiers and anionic emulsifiers is at a weight ratio to said aqueous solution of phosphoric acid of about of 3:23.

118. (Previously presented) The composition of claim 113 wherein said non-ionic emulsifiers comprise about 13 to about 15 carbon atoms of linear alcohol ethoxylate with about 10 moles of ethylene oxide.

119. (Previously presented) The composition of claim 113 wherein said anionic emulsifiers comprise secondary alkanesulfonate of sodium or sodium octyl sulfate.

120. (Previously presented) The composition of claim 114 wherein said polyoxyethylene alcohols comprise an alcohol having a carbon chain of about 13 to about 15 carbon atoms and have about 10 moles of ethylene oxide.

121. (Previously presented) The composition of claim 114 wherein said anionic emulsifiers comprise secondary alkanesulfonate of sodium or sodium octyl sulfate.

122. (Previously presented) The composition of claim 115 wherein said polyoxyethylene alcohols comprise about 10 moles of ethylene oxide and comprise a linear alcohol having from about 13 to about 15 carbon atoms.

123. (Previously presented) The composition of claim 115 wherein said anionic emulsifiers comprise secondary alkanesulfonate of sodium or sodium octyl sulfate.

124. (Previously presented) The composition of claim 116 wherein said non-ionic emulsifiers comprise about 13 to about 15 carbon atoms of linear alcohol ethoxylate with about 10 moles of ethylene oxide.

125. (Previously presented) The composition of claim 116 wherein said anionic emulsifiers comprise secondary alkanesulfonate of sodium or sodium octyl sulfate.

126. (Previously presented) The composition of claim 117 wherein said non-ionic emulsifiers comprise about 13 to about 15 carbon atoms of linear alcohol ethoxylate with about 10 moles of ethylene oxide.

127. (Previously presented) The composition of claim 117 wherein said anionic emulsifiers comprise secondary alkanesulfonate of sodium or sodium octyl sulfate.

128. (Currently amended) The composition of claim 113 wherein said non-ionic emulsifiers are at a weight ratio of about 60:40 linear alcohol ethoxylate with 10 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

129. (Currently amended) The composition of claim 114 wherein said non-ionic emulsifiers are at a weight ratio of about 60:40 linear alcohol ethoxylate with 10 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

130. (Currently amended) The composition of claim 115 wherein said non-ionic emulsifiers are at a weight ratio of about 60:40 linear alcohol ethoxylate with 10 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

131. (Currently amended) The composition of claim 117 wherein said non-ionic emulsifiers are at a weight ratio of about 60:40 linear alcohol ethoxylate with 10 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

132. (Previously presented) The composition of claim 113 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

133. (Previously presented) The composition of claim 114 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

134. (Previously presented) The composition of claim 115 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

135. (Previously presented) The composition of claim 116 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

136. (Previously presented) The composition of claim 117 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

137. (Currently amended) The composition of claim 113 wherein said non-ionic emulsifiers are at a weight ratio of about 85:15 isodecyl alcohol ethoxylate with 6 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

138. (Currently amended) The composition of claim 114 wherein said non-ionic emulsifiers are at a weight ratio of about 85:15 isodecyl alcohol ethoxylate with 6 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

139. (Currently amended) The composition of claim 115 wherein said non-ionic emulsifiers are at a weight ratio of about 85:15 isodecyl alcohol ethoxylate with 6 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

140. (Currently amended) The composition of claim 117 wherein said non-ionic emulsifiers are at a weight ratio of about 85:15 isodecyl alcohol ethoxylate with 6 moles of ethylene oxide to said anionic emulsifiers of secondary alkanesulfonate of sodium or sodium octyl sulfate.

141. (Previously presented) A composition for emulsifying free hydrocarbons in drill cuttings obtained using a drilling fluid comprising esters, said composition consisting essentially of:

a combination of non-ionic emulsifiers and anionic emulsifiers, said combination having an HLB of about 15.4, said anionic emulsifiers being selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters and said non-ionic emulsifiers comprise polyoxyethylene alcohols; and,

a media adapted to initiate polymerization of a ~~silicate solution~~ polymerizable silicate solution ~~polymerizable encapsulating material~~.

142. (Previously presented) The composition of claim 141 wherein said media comprises an aqueous solution of phosphoric acid.

143. (Previously presented) The composition of claim 142 wherein said aqueous solution of phosphoric acid comprises about 75 wt% phosphoric acid.

144. (Previously presented) The composition of claim 141 wherein said non-ionic emulsifiers comprise oleyl alcohol ethoxylate with about 20 moles of ethylene oxide.

145. (Previously presented) The composition of claim 141 wherein said anionic emulsifiers comprises sodium octyl sulfate.

146. (Previously presented) The composition of claim 142 wherein said non-ionic emulsifiers comprise oleyl alcohol ethoxylate with about 20 moles of ethylene oxide.

147. (Previously presented) The composition of claim 142 wherein said anionic emulsifiers comprises sodium octyl sulfate.

148. (Previously presented) The composition of claim 143 wherein said non-ionic emulsifiers comprise oleyl alcohol ethoxylate with about 20 moles of ethylene oxide.

149. (Previously presented) The composition of claim 143 wherein said anionic emulsifiers comprises sodium octyl sulfate.

150. (Currently amended) The composition of claim 141 wherein said non-ionic emulsifiers are at a weight ratio of about 90:10 oleyl alcohol ethoxylate with about 20 moles of ethylene oxide to said anionic emulsifiers of sodium octyl sulfate.

151. (Currently amended) The composition of claim 142 wherein said non-ionic emulsifiers are at a weight ratio of about 90:10 oleyl alcohol ethoxylate with about 20 moles of ethylene oxide to said anionic emulsifiers of sodium octyl sulfate.

152. (Currently amended) The composition of claim 143 wherein said non-ionic emulsifiers are at a weight ratio of about 90:10 oleyl alcohol ethoxylate with about 20 moles of ethylene oxide to said anionic emulsifiers of sodium octyl sulfate.

153. (Currently amended) A composition for emulsifying free hydrocarbons in drill cuttings obtained using a drilling fluid comprising paraffin-containing mud, said composition consisting essentially of:

a combination of non-ionic emulsifiers and anionic emulsifiers, said combination having an HLB of about 12.5, said anionic emulsifiers being selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters and said non-ionic emulsifiers comprise polyoxyethylene alcohols; and,

a media adapted to initiate polymerization of a polymerizable silicate solution ~~encapsulating material~~.

154. (Previously presented) The composition of claim 153 wherein said media comprises an aqueous solution of phosphoric acid.

155. (Previously presented) The composition of claim 154 wherein said aqueous solution of phosphoric acid comprises about 75 wt% phosphoric acid.

156. (Previously presented) The composition of claim 153 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

157. (Previously presented) The composition of claim 153 wherein said anionic emulsifiers comprises secondary alkanesulfonate of sodium or sodium octyl sulfate.

158. (Previously presented) The composition of claim 154 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

159. (Previously presented) The composition of claim 154 wherein said anionic emulsifiers comprises secondary alkanesulfonate of sodium or sodium octyl sulfate.

160. (Previously presented) The composition of claim 155 wherein said non-ionic emulsifiers comprise isodecyl alcohol ethoxylate with about 6 moles of ethylene oxide.

161. (Previously presented) The composition of claim 155 wherein said anionic emulsifiers comprises secondary alkanesulfonate of sodium or sodium octyl sulfate.

162. (Currently amended) A composition for emulsifying free hydrocarbons in drill cuttings obtained using a drilling fluid comprising synthetic isoparaffin-containing mud, said composition consisting essentially of:

one or more non-ionic emulsifiers having an HLB of about 10.9, said non-ionic emulsifiers comprising polyoxyethylene alcohols; and,
a media adapted to initiate polymerization of a polymerizable silicate solution ~~encapsulating material~~.

163. (Previously presented) The composition of claim 162 wherein said media comprises an aqueous solution of phosphoric acid.

164. (Previously presented) The composition of claim 163 wherein said aqueous solution of phosphoric acid comprises about 75 wt% phosphoric acid.

165. (Previously presented) The composition of claim 162 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 3 moles of ethylene oxide.

166. (Previously presented) The composition of claim 162 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 10 moles of ethylene oxide.

167. (Previously presented) The composition of claim 163 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 3 moles of ethylene oxide.

168. (Previously presented) The composition of claim 163 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 10 moles of ethylene oxide.

169. (Previously presented) The composition of claim 164 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 3 moles of ethylene oxide.

170. (Previously presented) The composition of claim 164 wherein said non-ionic emulsifiers comprise isotridecyl ethoxylate with about 10 moles of ethylene oxide.

171. (Currently amended) The composition of claim 162 wherein said non-ionic emulsifiers are at a weight ratio of about 50:50 isotridecyl ethoxylate with about 3 moles of ethylene oxide to isotridecyl ethoxylate with about 10 moles of ethylene oxide.

172. (Currently amended) The composition of claim 163 wherein said non-ionic emulsifiers are at a weight ratio of about 50:50 isotridecyl ethoxylate with about 3 moles of ethylene oxide to isotridecyl ethoxylate with about 10 moles of ethylene oxide.

173. (Currently amended) The composition of claim 164 wherein said non-ionic emulsifiers are at a weight ratio of about 50:50 isotridecyl ethoxylate with about 3 moles of ethylene oxide to isotridecyl ethoxylate with about 10 moles of ethylene oxide.

174. (Currently amended) A composition consisting of:

a combination of non-ionic emulsifiers with anionic emulsifiers having an HLB effective to emulsify free hydrocarbons and comprising a media adapted to initiate acid reactive polymerization of a polymerizable silicate solution ~~encapsulating material~~, wherein

said anionic emulsifiers are selected from the group consisting of alkane sulfates, alkane sulfonates, and phosphate esters; and,

said non-ionic emulsifiers comprise polyoxyethylene alcohols.

175. (Previously presented) The composition of claim 174 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise a carbon chain having from about 8 to about 18 carbon atoms; and

said polyoxyethylene alcohols comprise an alcohol having a carbon chain of about 8 to about 30 carbon atoms and having from about 3 to about 50 moles ethylene oxide.

176. (Previously presented) The composition of claim 174 wherein said polyoxyethylene alcohols comprise an alcohol having from about 13 to about 15 carbon atoms.

177. (Previously presented) The composition of claim 174 wherein said polyoxyethylene alcohols comprise an alcohol having from about 3 to about 20 moles ethylene oxide.

178. (Previously presented) The composition of claim 175 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

179. (Previously presented) The composition of claim 176 wherein said polyoxyethylene alcohols comprise from about 3 to about 20 moles ethylene oxide.

180. (Currently amended) The composition of claim 174 wherein said polyoxyethylene alcohols are selected from the group consisting ~~essentially~~ of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

181. (Currently amended) The composition of claim 175 wherein said polyoxyethylene alcohols are selected from the group consisting essentially of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

182. (Currently amended) The composition of claim 176 wherein said polyoxyethylene alcohols are selected from the group consisting essentially of linear polyoxyethylene alcohols, polyoxyethylene alcohols comprising about 10 moles ethylene oxide, and a combination thereof.

183. (Currently amended) The composition of claim 174 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

184. (Currently amended) The composition of claim 175 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

185. (Currently amended) The composition of claim 177 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

186. (Currently amended) The composition of claim 178 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

187. (Currently amended) The composition of claim 178 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

188. (Currently amended) The composition of claim 182 wherein said combination comprises a blend of non-ionic emulsifier and anionic emulsifier at a weight ratio of about 50/50 to about 85/15.

189. (Previously presented) The composition of claim 174 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

190. (Previously presented) The composition of claim 176 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

191. (Previously presented) The composition of claim 177 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

192. (Previously presented) The composition of claim 179 wherein said alkane sulfates, alkane sulfonates, and phosphate esters comprise from about 8 to about 12 carbon atoms.

193. (Previously presented) The composition of claim 183 comprising about 10 wt.% or less of said combination of non-ionic emulsifiers with anionic emulsifiers.

194. (Previously presented) A composition comprising:
means for emulsifying free hydrocarbons in drill cuttings; and
means for initiating acid reactive polymerization of a polymerizable encapsulating material.